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ORIGINAL PAPER

Use of complementary and alternative medicine by patients presenting to a paediatric Emergency Department

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Abstract Although the popularity of complementary and alternative medicine (CAM) has risen in the last decade, information about its use by paediatric patients presenting to an Emergency Department is still sparse. We report here the results of a cross-sectional survey of paediatric patients presenting to an urban, tertiary paediatric Emergency Department between October 2006 and March 2007. In total, 1143 questionnaires (68% of those distributed) were completed and available for analysis. Of these, 58% ($n=665$) of all respondents admitted that their child had received some form of CAM therapy, while 25% ($n=291$) admitted that their child was receiving CAM for the present illness. In 31% of the respondents ($n=354$), CAM had been prescribed by a physician, while 50% ($n=575$) used CAM as self-medication. Patients presented to the Emergency Department mostly because of an infection (42% of total; 29% of these used CAM) or a trauma (38% of total; 19% of these used CAM). Parents of CAM-users were significantly older, more often born in Switzerland and had significantly higher school education than those of the non-users. Nearly two-thirds of the administered CAM therapies were not prescribed by a physician, and 50% of the families using CAM did not discuss this with their general practitioner. Parental requirements implied that medical professionals on a paediatric Emergency Department should know the

effects and side-effects of CAM therapies and even be able to recommend them. The study population, even trauma patients, frequently used CAM. The use of CAM is characterised by a high rate of self-medication and the exclusion of the physicians from the decision-making process. The parents of paediatric patients frequently demand that CAM be considered as a possible treatment option and wish to have an open discussion with the medical professionals on this topic.

Keywords Complementary and alternative medicine · Herbal drugs · Homeopathy · Prevalence · Paediatric emergency medicine

Introduction

Complementary and alternative medicine (CAM) is defined as a group of diverse medical and healthcare systems, practices and products that is not considered to belong to ‘mainstream’ conventional medicine [18]. As the names indicate, complementary medicine is often used in addition to conventional medicine, whereas alternative medicine is practised instead of it. The use of CAM has become popular and even gained some acceptance by the traditional healthcare establishment. Not only are guidelines to handling CAM being established for the treatment of chronically ill patients, but many medical schools, health insurers and hospitals have also begun incorporating CAM into their practices [6, 12, 29–32].

Most of the studies published to date on the frequency of the use of CAM have addressed specific chronic illnesses, reporting values of between 31 and 84% [2, 9, 24–26]. Children use CAM less frequently than adult patients, but there is an increasing tendency for CAM use by the paediatric population [4, 21, 29]. A recent study implied

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that children with chronic illness were more than threefold more likely to use CAM than healthy ones [14]. Information on the use of CAM in children who are not chronically ill is sparse. Surveys on paediatric emergency departments in Pennsylvania, Michigan and Canada showed that 12–15% of the parents were treating their child with CAM [13, 20, 23]. It has recently been shown that several socio-cultural factors may affect the frequency of the use of CAM, resulting in strong regional variations [3]. The prevalence of the use of CAM by paediatric patients in Switzerland is largely unknown. A previous study by our intensive care unit implied that 18% of the parents of critically ill paediatric patients had turned to some form(s) of CAM therapy [16].

The aims of this study were: (1) to determine the prevalence of CAM in paediatric emergency medicine, (2) to characterise users and non-users of CAM, (3) to determine parental approaches to the administration of CAM to their children and (4) to survey the wishes of parents in terms of the use of CAM in paediatrics.

Patients and methods

Patients and study design

The study was an analytical cross-sectional survey of paediatric Emergency Department patients that was undertaken between October 2006 and March 2007 at the University Children's Hospital of Zurich. The study was approved and conducted in accordance with the ethical standards set by the Hospital Ethical Review Board. Questionnaires were offered by the ward clerk to parents (or other caretakers) while they were registering the child. The caretakers were asked to fill in the questionnaire, sign the consent form and hand it back to the ward clerk, the nurse or the front desk before leaving the department. German, English, French, or Italian versions of the patient information sheet, consent form and questionnaire were available. The questionnaire was completely anonymous. Exclusion criteria were: (1) previously filled-in questionnaire, (2) inability to read or write German, English, French or Italian, (3) resuscitation/emergency patients, (4) children unaccompanied by a parent or another caretaker and (5)

patients with emotional issues, such as child abuse or psychiatric problems. All other patients were eligible for the study. A multiple-choice questionnaire consisting of 34 multiple-choice questions was used; all disciplines that have been an integral part of the primary care in Switzerland until 2005 (homeopathy, herbal medicine, anthroposophic medicine, traditional Chinese medicine including acupuncture and Ayurveda) were specified [15, 30]. A pilot questionnaire—distributed to 20 families—was conducted to ensure the readability and clarity of the questions. Thereafter, minor revisions of the questionnaire—mainly involving its layout—were made.

Results

The use of CAM at the paediatric Emergency Department

Of the 1600 questionnaires distributed, 72% (1158) were returned. Of these, 1143 questionnaires were available for data analysis, 95% of which were in German. Fifteen returned questionnaires were not entered into the database as less than 50% of the questions were answered. Questionnaires were filled in by a patient's mother (65%, $n=701$), father (32%, $n=353$) or others (1%, $n=12$).

Of the respondents, 58% ($n=665$) reported that the patient had received some form of CAM—25% of all respondents ($n=291$) at present illness, 49% ($n=557$) at former illnesses (Table 1). When both past and present illnesses were considered, only 31% of all respondents ($n=354$) mentioned that the CAM therapies had been prescribed by physicians, whereas 50% ($n=575$) used CAM as self-medication (non-prescription drugs). When only the present illness was considered, 13% ($n=147$) reported that the CAM therapies were prescribed and 19% ($n=222$) that CAM were not prescribed by physicians. When only former illnesses were analysed, 24% ($n=274$) of all respondents reported having used some form of prescribed CAM, whereas 43% ($n=487$) had used it as self-medication.

Socio-demographic characteristics

The socio-demographic characteristics of the children and of the families who completed the questionnaires are presented

Table 1 Use of complementary and alternative medicine (CAM) by patients of a paediatric Emergency Department ($n=1143$)

Population datasets	All therapies of CAM		CAM therapies on prescription		CAM therapies not on prescription	
Present and/or former illness	665	58%	354	31%	575	50%
Present illness	291	25%	147	13%	222	19%
Former illness	557	49%	274	24%	487	43%

Data are shown on the use of CAM at present versus former illness and on prescription versus non-prescription drugs

in Table 2. The age of the mothers of the CAM users, but not that of the corresponding fathers, was significantly higher than that of non-users (29.4 vs. 28.5 years, $p<0.001$). An intact familiar structure was more often declared by non-users of CAM than by users (91 vs. 87%, $p<0.05$), with single mothers appearing more frequently among the CAM-users (10 vs. 7%, $p<0.05$). Of the patients, 91% had been born in Switzerland, and no significant difference in this parameter could be found between users and non-users of CAM. With respect to the country in which the patients' parents had been born, however, there were significant differences in the two groups, with 69% of the mothers and 65% of the fathers of the users, compared to only 54% of the mothers and 56% of the fathers of the non-users, being born

in Switzerland ($p<0.001$ and $p<0.01$, respectively). The educational levels of the mothers and fathers were significantly higher ($p<0.05$ and $p<0.01$, respectively) in the group of CAM-users (47 and 57%, respectively) than in the group of non-users (42 and 50%, respectively). Household income and the type of health insurance were identical in the two groups, only the prevalence of an additional insurance for CAM was twice as high in the user group as in the non-user group (64 vs. 37%, $p<0.001$).

All age groups were similarly represented among the patients using CAM during the present disease: 22% were 0–1 years of age; 27.65%, 1–3 years; 23.61%, 3–6 years; 32.32%, 6–10 years; 22.28%, 10–16 years. When subgroups of patients were made according to the various

Table 2 Socio-demographic characteristics of CAM-users and non-users (*n.s.* non-significant)

Characteristic	Total, $n=1143$ (%)	CAM-users, $n=665$ (%)	Non-users, $n=478$ (%)	Significance (p)
Age (median in years) ^a				
Child	5.6	6.1	4.9	< 0.001
Mother	34.7	35.5	33.4	< 0.001
Father	37.4	37.8	36.8	< 0.05
Age at birth of child (median in years)				
Mother	29.0	29.4	28.5	< 0.01
Father	31.8	31.7	31.8	<i>n.s.</i>
Sex (Child)				
Male	586 (55)	354 (55)	232 (54)	<i>n.s.</i>
Female	485 (45)	290 (45)	195 (46)	
Family structure				
Intact family	956 (89)	562 (87)	394 (91)	< 0.05
Mother only	96 (9)	65 (10)	31 (7)	< 0.05
Father only	4 (0)	2 (0)	2 (0)	<i>n.s.</i>
Patchwork family	19 (2)	14 (2)	5 (1)	<i>n.s.</i>
Country of birth—child				
Switzerland	958 (92)	575 (91)	383 (93)	<i>n.s.</i>
Europe	56 (5)	39 (6)	17 (4)	<i>n.s.</i>
Other	25 (2)	12 (2)	13 (3)	<i>n.s.</i>
Country of birth—mother				
Switzerland	668 (63)	443 (69)	225 (54)	< 0.001
Europe	266 (25)	140 (22)	126 (30)	< 0.01
Other	123 (12)	56 (9)	67 (16)	< 0.001
Country of birth—father				
Switzerland	648 (62)	413 (65)	235 (56)	< 0.01
Europe	280 (27)	153 (24)	127 (30)	< 0.01
Other	120 (11)	65 (10)	55 (13)	< 0.05
Post-secondary school education				
Mother	474 (45)	297 (47)	177 (42)	< 0.05
Father	567 (54)	359 (57)	208 (50)	< 0.01
Household Income (Euro)				
	5200	5260	5150	<i>n.s.</i>
Insurance				
Basic insurance	887 (83)	530 (80%)	357 (83)	<i>n.s.</i>
Half private	105 (10)	64 (10)	41 (10)	<i>n.s.</i>
Private	76 (7)	46 (7)	30 (7)	<i>n.s.</i>
Additional insurance for CAM	566 (53)	412 (64)	154 (37)	< 0.001

The distinction between users and nonusers refers to the present and/or former illness, except for age of child, mother and father, in which case it refers to the present illness

^a CAM use during present illness

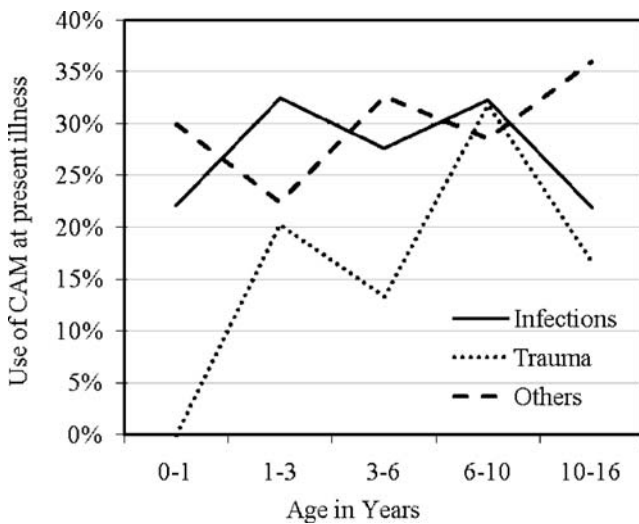


Fig. 1 Complementary and alternative medicine (CAM)-users with different types of present illnesses according to their age. The data concerning patients with infection, trauma and others, mostly chronic illnesses, are depicted. Data on the whole group of patients are mentioned in the text

disease groups, it became apparent that the age distribution differed according to the present illness (see Fig. 1), with trauma patients with CAM-use being clearly underrepresented in the subgroup 0–1 years of age.

Presenting disease and use of CAM therapies

Twenty-nine percent of the 460 (42% of total) patients which consulted the Emergency Department because of an infection and 19% of the 416 (38% of total) patients which consulted the Emergency Department because of a trauma used CAM (Table 3). The use of CAM by patients with infectious diseases was significantly higher ($p < 0.01$) and that by trauma patients was significantly lower ($p < 0.01$) than the mean rate of 26% CAM use when the entire patient cohort was considered.

Reasons and personal preferences for using CAM within the family unit

The goals of the parents for using CAM were multiple: to strengthen the immune system (44.36% of all CAM users, $n = 279$), to improve the chance of being cured (39.75%, $n = 250$), to ensure that all possible medical options were utilized (31.32%, $n = 197$), to achieve a better healing (30%, $n = 193$), to stabilize the body (21.78%, $n = 137$), to balance the inner harmony/mental situation (21.74%, $n = 136$), to moderate the side effects of the conventional therapy (15.74%, $n = 99$) and to avoid a relapse (9%, $n = 57$).

The use of CAM was preferred by the mother in 91.75% of cases ($n = 612$), followed by the father, 52.77% ($n = 352$), and finally by the child, 14.84% ($n = 99$).

Administration of CAM therapies and physicians attitude towards CAM

Whereas 62% ($n = 368$) of the CAM therapies were actually self medication (family members, friends), 28% ($n = 167$) were prescribed by paediatricians, 14% ($n = 159$) by family physicians, 21% ($n = 125$) by other therapists (physiotherapist, naturopath, non-medical homeopath etc.) and 10% ($n = 58$) by others (various answers possible). When the caretakers were asked if their physicians were familiar with CAM therapies, 22% ($n = 229$) answered that their physician is well informed on the subject of CAM and is her/himself a specialist in the field of homoeopathy (12%, $n = 126$), anthroposophic medicine (4%, $n = 47$), phytotherapy (also called herbal medicine, 2%, $n = 19$), traditional Chinese medicine (1.8%, $n = 17$) or other CAM (2%, $n = 20$); 50% ($n = 521$) answered that they had never talked with their physician about CAM; 5% ($n = 48$) answered that their physician is against such therapies; 24% ($n = 251$) answered that their physician tolerates CAM, but does not care either way.

Table 3 Present disease and use of CAM as described by the study participants (*n.s.* non-significant)

Presenting disease	Total answers, $n = 1106$ (%)	CAM use, $n = 285$ (%)	No CAM use, $n = 821$ (%)	Significance (p)
Total	1106	285 (26)	821 (74)	
Infection	460 (42)	134 (29)	326 (71)	< 0.01
Trauma	416 (38)	79 (19)	337 (81)	< 0.01
Allergic	34 (3)	12 (35)	22 (65)	<i>n.s.</i>
Pulmonal	21 (2)	14 (67)	7 (33)	<i>n.s.</i>
Heart	7 (1)	3 (43)	4 (57)	<i>n.s.</i>
Neurological	7 (1)	2 (29)	5 (71)	<i>n.s.</i>
Oncologic	3 (0)	1 (33)	2 (67)	<i>n.s.</i>
Hormonal/metabolic	3 (0)	1 (33)	2 (67)	<i>n.s.</i>
Other	155 (14)	39 (25)	116 (75)	<i>n.s.</i>

The distinction between users and non-users refers to the present illness

Parental requirements regarding CAM therapies at the paediatric Emergency Department

With respect to how they viewed the ideal situation in terms of CAM therapies and the physicians working at the paediatric Emergency Department, most study participants recommended that they should be able to propose and recommend CAM therapies themselves (51%, $n=511$), 40% ($n=399$) of the caregivers answered that the physicians should (just) be informed about the CAM therapies used by the patients, their effects and side effects and a minority of caregivers (9%, $n=86$) answered that there is no need of specific knowledge for CAM (Table 4).

Participants were also asked if CAM should be offered as a medical option by the Emergency Department. Forty percent ($n=396$) required that physicians at the Emergency Department should be able to recommend CAM therapies themselves, 46% ($n=448$) would have accepted CAM even instead of conventional therapies if the disease would have allowed it whereas 26% ($n=253$) would accept CAM only in addition to conventional therapies; 17% ($n=362$) of the participants answered yes, but with the restriction of only if the parents propose it themselves and explicitly want CAM, while 37% ($n=362$) would appreciate informative documentation instructing parents about the possibilities and limits of CAM at the paediatric Emergency Department.

Participants were asked to what extent CAM should be offered at the children's hospital in general (various answers possible). The majority (56%, $n=553$) stated that they would appreciate a hospital physician qualified in CAM therapies being at their disposal should they want so;

29% ($n=291$) of the participants recommended that a hospital physician should contact the parents actively and discuss the possibilities of CAM therapy with them; For 19% ($n=191$) it would be enough if an external physician qualified in CAM therapies were to be at the disposal of the parents should they so desire such advice; 31% ($n=311$) mentioned that there should be a special department in the hospital where CAM therapies would be automatically applied when advisable. Finally, 34% ($n=340$) would support a group of researchers in the hospital to investigate the CAM therapies.

Discussion

Every fourth patient presenting to the Emergency Department during the study period was using some form of CAM therapy during the present illness, which is clearly higher than the prevalence reported for other countries [13, 20, 22, 23], suggesting that CAM is frequently used by children in the German-speaking part of Switzerland. Much to our surprise, even 19% of patients presenting to the Emergency Department because of trauma received some form of CAM. The high rate of CAM use in Switzerland is confirmed by our survey showing that significantly more children of parents born in Switzerland were treated with CAM than children of parents born in other countries. The reasons for this distinction remain unclear. Possibly the high percentage—24% in our investigation—of paediatricians in the German-speaking part of Switzerland with a special knowledge of CAM contributed to the high

Table 4 Parental requirements concerning the use of CAM at the paediatric Emergency Department

Parental requirements concerning the use of CAM	<i>n</i> (%)
Doctors knowledge at the Emergency Department concerning CAM ($n=999$)	
-They should be able to propose and recommend CAM therapies based on professional knowledge.	511 (51)
-They should know CAM used by the parents, their effects and side effects.	399 (40)
-There is no need of specific knowledge.	86 (9)
Prescription of CAM at paediatric Emergency Department (various answers possible; $n=984$)	
-If the disease permits, even instead of conventional therapies.	448 (46)
-The doctors should recommend CAM themselves if the disease permits.	396 (40)
-There should be an informative documentation instructing parents about the possibilities and limits of CAM.	362 (37)
-But only in addition to conventional therapies.	253 (26)
-But only if the parents propose them it themselves and want them explicitly.	163 (17)
-No.	83 (8)
Representation of CAM at children's hospital (various answers possible; $n=988$)	
-A hospital doctor, qualified in CAM, should be at the disposal of the parents if they want so.	553 (56)
-There should be a group of researchers in the hospital who study and investigate CAM.	340 (34)
-In the hospital there should be a special department where CAM should be applied automatically when it is advisable.	311 (31)
-A hospital doctor should actively contact the parents and discuss with them the possibilities of CAM therapy.	291 (29)
-An external doctor qualified in CAM should be at the disposal of the parents if they so want.	191 (19)
-There is no need for it.	99 (10)

100% was set as the total numbers of all respondents who had confirmed at least one of the statements made in each question

frequency of CAM use. In this study, however, the paediatrician's attitude towards CAM was estimated by the questionnaires filled in by the caretakers only. A direct questioning of paediatrician's attitudes towards CAM deserves further investigation.

The strengths of this study are: (1) the high number of respondents, (2) the high response rate, (3) the answering of the questionnaire in private and (4) the absolute protection of anonymity of the respondents. The major limitations of the study are: (1) the lack of clinical data, (2) the exclusion of patients who could not read or write German, English, French or Italian and (3) a rather wide definition of CAM. The description of the present illness was provided by the respondents themselves while answering the questionnaires rather than by referring to clinical data. While this approach has a number of drawbacks, it does have the advantages of preserving the respondents anonymity and keeping the work load of the study and corresponding budget rather low. The information on the disease of the patients provided by the respondents did, however, correlate with clinical data collected for outcome measurements (data not shown). Finally, in terms of the wide definition of CAM, we believe that this was crucial for our study, since it made the identification of the frequency of self-medication possible.

We found no difference between the user and non-user groups in terms of age, sex and country of birth of the patients, household income or insurance status. However, the parents of CAM-users were relatively older at the birth of the patients, more often born in Switzerland and had a significantly higher education. An intact family structure was slightly more frequent among non-CAM users, whereas single mothers administered CAM more often, which is in accordance to our finding that mostly mothers prefer CAM therapies for their children in a familiar setting. Our results suggest that the boundaries between CAM-users and non-users are smooth and that CAM is of general interest. This result contradicts those of most previous studies in which marked differences between CAM-users and non-users were described, suggesting that the users constitute a well-defined group of people, well educated, often with chronic illness and high incomes [3, 9, 26].

Several studies have indicated that patients do not routinely tell their conventional healthcare givers that they are using CAM [1, 7, 11]. Reasons for this omission are: (1) the patients are not asked for this information; (2) the fear of being ridiculed; (3) the belief that their physician would have little information on CAM; (4) the conviction that CAM can not be harmful; (5) the conviction that the decision for CAM is a personal one with no need for a physician's input [1, 28]. On our intensive care unit, 41% of the CAM-users reported using this type of medicine without discussing it with the physician [16, 19]. This high

frequency was supported by the results of our survey in that half of the families using CAM did not discuss this with their physician

Remarkably, nearly two-thirds of the administered CAM was not prescribed by a physician. This fact deserves immediate action from the health authorities, because: (1) self medication per se is a potential health risk [10, 17, 19], (2) interactions between CAM and conventional therapies are possible [10, 26] and (3) the effects and side-effects of CAM are just beginning to be adequately investigated [4, 5, 8, 12, 32].

Emergency medicine is viewed by most physicians as a classical domain of the conventional medical practitioner, with CAM being of negligible relevance. However, our observations indicate that parents of children admitted to a paediatric Emergency Department often demand that CAM be considered in the medical options and wish to have an open discussion about CAM therapies with the medical professionals. Such a discussion would shed some light on patient's values, expectations and lifestyle and would certainly contribute to a more effective and fruitful physician–patient relationship [27].

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